

Math Academy 2011

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Shift 4

Power Teaching

- Class! Yes!
- Hands and Eyes
- Teach! Okay!
- Mighty Oh Yeah!/ Mighty Groan!
- It's Cool
- 10 Finger Woo
- Sign language- yes, no
- <http://powerteachers.net>

The Use of Daily Math Journals

The many benefits of math journals:

- the ability for the teacher to highlight, review or spot check a concept briefly.
- cut down on the number of worksheets to be copied
- a good portfolio component
- students can keep journals at their desk, reducing the time it takes to pass out and collect worksheets
- allow students to write and/or draw their answers, increasing their problem solving ability
- encourage the process of discovery as students can learn to create their own math problems

Ways to use journals?

Shift # 4

Tell your partner 5 things you
know about the following.

25 50 75

Discussion

○ Notes:

Shift #4

Create language-rich
classroom routines.

Rationale

- Students problems often arise not from the a difficulty with mathematical concepts, but from serious confusion with the terms and the vocabulary.

“The projection of a leg onto the hypotenuse of a right triangle is the mean proportion between the entire hypotenuse and the length of the projection of the leg onto the hypotenuse.”

- Are you struggling with hypotenuse, leg, projection, and mean proportion?

Rationale cont.

- The simplest and easiest way to get students that are just below proficient to proficient is to teach them the mathematical terms.

What the Research Says About Vocabulary Knowledge

- Children who enter school with limited vocabulary knowledge become more discrepant over time from their peers who have rich vocabulary knowledge. (Biemiller & Slonin, 2001)
- The relationship between reading comprehension and vocabulary knowledge is strong and unequivocal. (Bauman & Kame'enui, 1991; Stanovich, 1986)

Differences in Vocabulary Growth

Student A	Student B
2 words per day	8 words per day
750 words per year	3,000 words per year

Children from advantaged homes have receptive vocabularies that are five times larger than children who come from low SES

Homes.(Hart & Risley, 1995, 1999)

WHY?

Parents spoke significantly fewer words to their children.

Children hear more imperative speech or commands rather than expansive conversations.

Academic Vocabulary

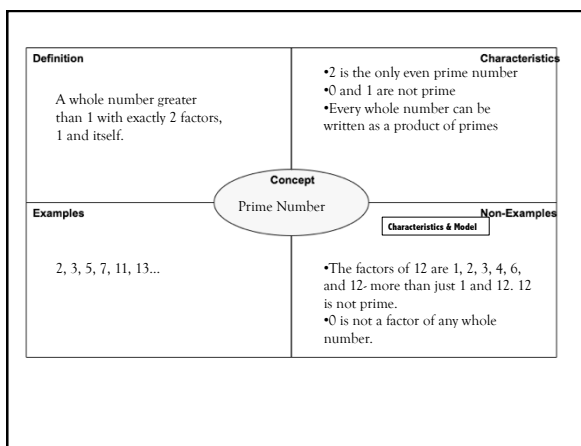
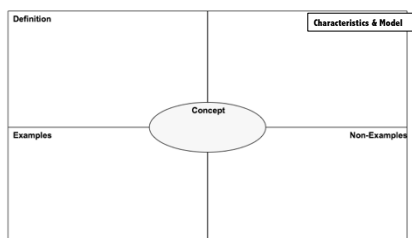
- While **four encounters** with a word did not reliably improve reading comprehension, **12 encounters** did (McKeown, Beck, Omanson, and Pople, 1985).
- The same student placing at the 50th percentile in reading comprehension with no direct vocabulary instruction, placed at the 83rd percentile when provided specific instruction in academic vocabulary (Stahl and Fairbanks, 1986).

How do we do this?

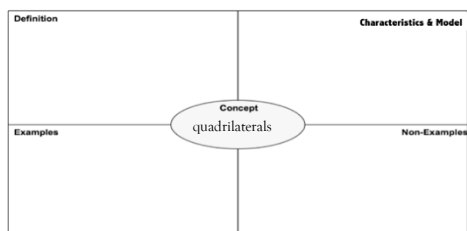
- Use the words again and again in context
- Mnemonics
 - 3 x 4 3 rows and 4 columns- Think of RC cola - row then column
 - 7 x 8 = 56 think 5, 6, 7, 8
 - Others?
- Frayer model
- Marzano's Model
- Word wall words with pictures
- Others?

How do WE teach them?

Using the Frayer Model to deliver effective vocabulary instruction.



Let's try it with a partner



Marzano's Building Academic Vocabulary

- See handout
- Any comments?

Power Statements

- Convince me!
- How do you know?

Questions like these lead to a discussion that involves language rich math vocabulary.

What should be in an effective mathematics classroom?

- Ongoing emphasis on the use and meaning of mathematical terms- including definitions and their connections to real-world objects and/or pictures
- Students and teachers use mathematics terms, vocabulary and notions frequently and precisely.
- Extensive use of word walls with pictures when appropriate and in Spanish when applicable.

Task/Plan

- Journal- How will your teaching change because of the use of Shift #4
- In teams of two, create a lesson plan using the Core and More Lesson Checklist but only the "Building a Foundation" (vocabulary) portion.